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ABSTRACT

These materials include two papers concerning population education. In the first paper, the author reports the results of a study done at West Visayas State College in the Philippines. There, seventy-five fourth-year students were divided into three groups. Group A received experimental population curriculum materials and formal instruction; group B received only the curriculum materials; and group C received neither. Based on pretest and posttest results, students in group A scored the highest. Also recorded were significant attitudinal changes in groups A and B, but no significant changes in group C. This information, plus that received from a questionnaire-checklist, provided data for the refinement of the curriculum materials. In the second paper, the author discusses the sequence of events in developing a population education program. These include the formation of goals and objectives, the formulation of a knowledge base for curriculum development, the selection of content, the incorporation of population education in the school curriculum, the education of teachers, and the preparation of instructional materials. These are done with respect to the programs of the individual nations. (MA)

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A FIELD TRY-OUT OF POPULATION EDUCATION CURRICULUM MATERIALS FOR TEACHER EDUCATION PROGRAMMES - AN EXPERIMENTAL STUDY: A CASE OF THE PHILIPPINES

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In response to a pressing need to introduce population education in teacher education programmes, the work of developing needed curriculum materials was initiated at the Unesco-sponsored Asian Institute for Teacher Educators, Quezon City, in July 1972. The initial output was subjected to a preliminary training exposure involving key teacher educators from selected teacher education institutions from fourteen different Asian countries, including the Philippines. Reactions of this group contributed to the revision of the materials and gave impetus to the preparation of supplementary ones for a subsequent pilot field try-out in the local Philippines context.

In order to make the curriculum materials on Population Education for teacher education programmes as concrete as possible, it was considered important not only to incorporate basic concepts suggested in reference sources, but also to ascertain that these ideas and procedures be applicable in individual countries of Asia. Thus, a field try-out in the Philippines local context, with the West Visayas State College in Iloilo City as venue, was carried out. This paper is, in essence, a report on the experiment conducted 12 February to 2 March 1973.

A. The Setting

The West Visayas State College in Iloilo City, an hour-and-a-half's plane flight south from Manila, has a college enrolment of 650 students in the undergraduate level and 300 in the graduate level, for the academic year 1972-1973. There are 75 faculty members on the instructional staff and 31 administrative personnel. Formerly called the Iloilo Normal School, it is one of eight pioneer public normal schools in the Philippines established in 1924 primarily for the training of elementary school teachers. Its graduates serve the West Visayas region comprised of the provinces of Aklan, Antique, Capiz, Iloilo, Negros Occidental, and Romblon, as well as the chartered cities therein.

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*The views expressed in this paper are the author's and should not be construed as necessarily presentingthe opinion or views of Unesco or of the AITE/NRDCTE, University of the Philippines.

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An agreement was entered into on 8 January 1973 jointly by Dr. Alfredo T. Morales on behalf of the Asian Institute for Teacher Educators/National Research and Development Centre for Teacher Education and by President Jose B. Ledesma on behalf of the West Visayas State College, where the conference was held. The details included among others the objectives, the procedure and the follow-up work related to the field try-out and testing of curriculum materials on population education prepared by AITE/National Research and Development Centre for Teacher Education. In addition, a time allotment of three weeks (2 hours daily, five days a week), or a total of 30 hours, was specified including a practicum of the community-project type for the remaining 20 hours. Associate Professor Luz F. Hiponia of the WVSC faculty, and also an alumna of AITE's Eighth Institute for Key Teacher Educators, was designated project instructor.

B. Work Plan

The subjects of this study were 75 fourth-year college students taking up courses leading to either the degree of Bachelor of Arts (B.A.) or Bachelor of Science in Education (B.S.E.) selected at random. With an average age of 21 years, they belonged to an almost similar socio-economic background: the middle class. All of them had had no previous formal course in population education.

The respondents were grouped into three categories of twenty-five students each, namely: Experimental Group A, Experimental Group B, and Control Group C. Experimental Group A received formal instruction with the prepared curriculum materials on population education for a period of three weeks. Class sessions were held two hours daily, from four to six in the afternoon, except on Saturdays and Sundays. Only one student dropped out after a week, for personal reasons. Experimental Group B received no formal instruction but were given the curriculum materials which they read and studied by themselves. Control Group C did not receive formal instruction nor the curriculum materials on population education.

On the first day of the trial period, the three groups were subjected to a pre-test of approximately 100 items. A post-test of approximately the same length was administered simultaneously to the three groups at the end of the "try-out" session. Students, however, received no advance notification that said tests would be administered.

The daily log of class activities for the entire three weeks was based on the curriculum materials and teaching guides prepared by the author at AITE/National Research and Development Centre for Teacher Education specifically for this experimental study.

C. Objectives

The field "try-out" of the prepared curriculum materials on population education was based on the following eight hypotheses regarding knowledge:

1. There is no difference in the performance of Experimental Group A before and after receiving formal instruction in the prepared curriculum materials on population education.

2. There is no difference in the performance of Experimental Group B before and after studying the prepared curriculum materials on population education on their own.

3. There is no difference in the performance of the Control Group who received neither training nor the prepared curriculum materials on population education.

4. There are no significant differences in the performance of the three groups in the pre-test.

5. There is no difference between the performance of the students who received formal instruction with the prepared materials on population education (Experimental Group A) and those who studied the same on their own (Experimental Group B).

6. There is no difference between the performance of Experimental Group A and of the Control Group.

7. There is no significant difference between the performance of Experimental Group B and of Control Group C.

8. There is no difference between the performance of Experimental Groups A and B, and those of the Control Group.

This study also attempted to verify the following assumptions regarding attitudes:

1. There will be change in the attitudes of the students who received formal instruction with the prepared materials on population education.

2. There will be change in the attitudes among the students who received materials but did not receive formal instruction.

3. The students in the control group who had no formal instruction and did not receive materials will not manifest any change in attitudes towards the population situation.

In addition to these hypotheses and assumptions, the following objectives served as guidelines:

1. To solicit students' reactions and views on the prepared curriculum materials on population education as well as on the instructional programme;

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2. To secure feedback from the faculty on the prepared curriculum materials on population education;

3. To collect data and information for improving the materials needed in classroom instructional situations.

D. Findings of the Study

a. Students' Background

Personal data regarding the students' background were obtained through the pre-test questionnaire section entitled "Basic Information About You and Your Family". A summary of the findings is hereby presented.

Of a total of 75 fourth-year collegiate students involved in this study, 4 are male and 71 are female. The mean age for Group A is 21.7; for Group B, 20.8 and for Group C, 21.16. Only one student is married. Eighty-eight per cent of the students are Catholics, ten per cent Protestants and two per cent Aglipayan.

An average of 14 students, or 57 per cent, in each of the three groups are from rural areas while 11 students, or 43 per cent, are from towns or municipalities. The average family size in each of the three groups is 6, with 2 boys and 4 girls. More than half of the respondents are boarding students. A few either live with their respective families or with relatives in the city.

More than half of the fathers of the respondents are engaged in agriculture, hunting, animal husbandry and fishing and almost the same number of mothers are not working. The parents' schooling does not vary very much. A little less than half obtained elementary schooling, while a slightly smaller group had gone on to secondary, college or graduate school.

These facts indicate that the respondents have similar socio-economic backgrounds.

Personal expectations regarding the highest degree the respondents will pursue, as indicated, reveal that about one-third expect to proceed to graduate work for a Master's degree. A similar number are undecided. On the other hand, with regard to the highest education the family allows, about one-third of the respondents are of the opinion that their families will allow them to finish college only, a slightly smaller number, to finish graduate studies, and a smaller number are not sure.

With regard to future occupation, more than half of the students have elected to render service in education. Others expect to be in the government service, whether or not as teachers was not specified. Half of them are not sure about getting the job wanted. Various factors may have

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influenced their responses, one of which is the prevailing idea that a surplus of elementary school teachers in the Philippines at present has swelled the ranks of the educated unemployed.

b. Comparison of the Pre-Test and Post-Test Results in Terms of Students' Performance 1/

The pre-test and post-test were administered to all the seventy-five respondents of this study. The eight hypotheses stated in the study design were verified through statistical analysis of the results of the pre-test and the post-test.

To verify hypotheses 1, 2, and 3, the means for the pre-test and post-test for each of the groups were computed.

TABLE 1

MEANS FOR THE PRE-TEST AND POST-TEST RESULTS FOR THE THREE GROUPS

	Experimental Group A	Experimental Group B	Control Group C
Pre-Test	30.56	26.76	25.56
Post-Test	35.79	29.72	27.40
Difference	+5.23	+2.96	+1.84

An analysis of the above shows that no two means for the three groups are the same. Initially, the experimental groups obtained higher means than the control group. Due to the difference of the computed means, it was necessary to determine the significance of the difference between correlated means obtained from the same test administered on two separate occasions. This experimental design is called the "difference method".

Hypothesis 1: There is no difference in the performance of Experimental Group A before and after receiving formal instruction in the prepared curriculum materials on population education.

To verify Hypothesis 1, the means of the difference, the standard error of the mean of the difference, and the t-ratio for each group were computed 2/ as shown in the following table:

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1/ Refer to Appendix 2, "Statistical Results of the Study on Population Education Materials at the West Visayas State College", in Hyun Ki Paik, Revised Report on the Population Education Instructional Materials Development Project--For Teacher Educators (Quezon City: AITE/National Research and Development Centre for Teacher Education, University of the Philippines, March 31, 1973).

2/ Henry E. Garret, Statistics in Psychology and Education, 6th ed. (New York: David McKay Company, 1966), p. 461. Garrett's Table of t for determining the significance of statistics was referred to.

TABLE 2

DIFFERENCE METHOD TO SHOW CORRELATION

	Group		
	A	B	C
Means of the differences	5.17	2.56	1.84
Standard deviation of the differences	3.58	3.11	3.56
Standard error of the mean of the differences	1.62	.62	.71
t-ratio	3.13	5.02	.03

Group A has a t-ratio of 3.13 which is higher than the 2.80 ratio; hence, the findings are significant at the .01 level of significance. The null hypothesis is rejected. The formal instruction on the prepared curriculum materials on population education resulted in the difference in performance.

Hypothesis 2: There is no difference in the performance of Experimental Group B before and after self-study of the prepared curriculum materials on population education.

Using the same statistical procedure used to verify the first hypothesis, it was found that Group B has a t-ratio of 5.02, as shown in Table 2. This is significant at the .01 level of significance and the above null hypothesis is rejected.

Hypothesis 3: There is no difference in the performance of the Control Group which received neither training nor the prepared curriculum materials on population education.

As shown in Table 2, the t-ratio of Group C is .03 which is less than the 2.80 ratio, and is insignificant at the .01 level of significance. The null hypothesis is verified.

To verify hypothesis 4, it was necessary to compute the t-ratio for each of the three groups in the pre-test.

TABLE 3

COMPARATIVE PERFORMANCE IN THE PRE-TEST OF THE THREE GROUPS

Groups	t	
A and C	4.81	$P \leq .01$
A and B	12.20	$P \leq .01$
B and C	1.13	$P \leq .01$

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Hypothesis 4: There are no significant differences in the performance of each of the three groups in the pre-test.

Using the "small group method" (less than 30 samples), the comparative performance statistics of the A and C groups is significant at the .01 level and the null hypothesis is rejected.

Comparing Group A and Group B performances, the statistics are significant at the .01 level of significance. The null hypothesis is therefore rejected. There is a difference between the "material and formal instruction group" and the "materials only" group.

Comparing Groups B and C, the statistics are significant at the .01 level of significance. Thus, the hypothesis is rejected. However there is very little difference between the "materials only" group and the "no formal instruction, no materials" group.

To verify hypotheses 5, 6, 7, and 8, a comparison in the performance of the three groups in the post-test was made. The f-ratio 3/ was computed, as shown in the table below.

TABLE 4

COMPARATIVE PERFORMANCE IN THE POST-TEST OF THE THREE GROUPS

Groups	f	
A and B	234	$P \leq .01$
B and C	8.7	$P \leq .01$
A and C	974	$P \leq .01$

Hypothesis 5: There is no significant difference between the performance of the students who received formal instruction with the prepared curriculum materials on population education (Experimental Group A) and those who studied the same on their own without formal instruction (Experimental Group B).

Comparing performances of Groups A and B, the statistics are significant at the .01 level of significance; hence, the null hypothesis is rejected. There is a difference in the performance between the "materials and formal instruction group" and "the materials only" group. The formal instruction most probably accounted for this difference.

Hypothesis 6: There is no significant difference between the performance of Experimental Group A and the Control Group.

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3/ For the post-test analysis, the f-ratio was computed in order to verify the significant difference.

Comparing Groups A and C, the statistics are significant at the .01 level of significance and the null hypothesis is rejected. There is a difference between the performance of the "materials and formal instruction" group and the "no formal instruction, no materials" group.

Hypothesis 7: There is no significant difference between the performance of Experimental Group B and the Control Group.

Comparing Groups B and C, the statistics are significant at the .01 level of significance, and the null hypothesis is rejected. There is a difference between the performance of the "materials only" group and the "no formal instruction, no materials" group.

Hypothesis 8: There is no significant difference between the performance of Experimental Groups A and B, and the Control Group.

Based on the findings for hypotheses 5, 6 and 7, the difference between the performance of Experimental Groups A and B, and the Control Group exists at the .01 level of significance. The null hypothesis is rejected. The students who either received instruction with materials, or only the materials without formal instruction, still performed better than those who received neither formal instruction nor materials.

c. Changes in Attitudes of Students

The pre-survey and post-survey questionnaire duplicated the same set of 27 questions regarding students' opinions and ideals about some present problems facing the Philippines. Except for a few items, the findings of this portion of the pre-survey and post-survey questionnaire did not reveal marked changes in the respondents' attitudes. However, some change in the attitudes of students regarding desirable marriage age for Filipino men (item 18) was revealed. With regard to the response of Group A, the mean ideal age for desirable marriage age for men as revealed by 24 students who responded, was 29.5 in the pre-test, but these same students believed the mean age, 28.4, an ideal age in the post-test. On the other hand, students of Group B chose the mean age, 27.4, as the ideal age in the pre-test, but the post-test showed the mean age, 28.4, as the ideal age, an increase of one year.

One of the significant findings regarding change in attitudes of the students is that of the average size of the Filipino family (item 22). The findings showed that Groups A and B chose a greater number, 5, as the mean size of a Filipino family in the pre-test while the same groups chose a smaller number, 3, as the mean size of a Filipino family in the post-test. Group C did not register any change in either pre-test or post-test with regard to the desirable number of children, which was 4.

Thus the findings of this section of the questionnaire do not sufficiently reveal a definite change in the attitudes of the students except in the desirable marriage age for Filipino men and the average size of the Filipino family.

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d. Students' and Faculty Feedback on the Population Education Course

In an effort to amplify the bases for refining the curriculum materials on population education, the respondents in Experimental Group A were given the opportunity to evaluate the course content, teaching techniques and the attainment of their own course objectives. A 20-item questionnaire-checklist was included in the post-test for this purpose. The project instructor was also provided with the same opportunity. Both evaluations are herein discussed in brief.

Students' Views. Of the original 25 students who took the course, only 24, as previously mentioned, finished it. Of these, 20 answered Part III of the Post-Survey forms entitled "Information about the Instructional Programme".

The responses were generally favourable. The students were unanimous in the assertion that the course was interesting and challenging and that they would recommend it to friends for inclusion in their academic programme. Furthermore, they affirm that a more defined awareness of the seriousness of the problem of rapid population growth in their country has been generated as an outcome of the course.

With regard to question 10 (item 87 in the post-survey form) concerning the unit they found most interesting, 75 per cent chose Selected Quality of Life Issues. This was probably because the topic affected their lives most.

As regards question 7 (item 84 in the post-survey form) on student participation in the instructional activities, 19 chose option b; that is, they asked questions in class a few times while participating in the class activities. The rest of the group chose option c, asked questions only once while participating in the class. No one chose option a, asked questions many times, nor option d, did not ask any questions. The majority of the students responded that they were asked to gather population data on their own a few times and that they were able to engage in other types of activities daily. The responses indicate a highly positive attitude of students towards the course.

A student majority recommends that the course on Population Education be required in their curriculum effective next academic year, 1973-1974.

Faculty Feedback. Each of the three instructional units contains a teacher's self-evaluation form to which the instructor who handled the course responded. This faculty feedback serves the dual purpose of indicating ways by which the prepared curriculum materials could be enriched, as well as pinpointing specific phases of the instructional programme which could be improved.

The responses of the instructor indicate that the objectives of the course and the motivation of students to participate actively in the

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classroom activities were both accomplished to a great extent. The duration of the course, however, should be lengthened as the faculty observation indicates that the students could have learned more if the course were extended over a longer period of time. On the basis of this observation, the original fifteen class hours were expanded to eighteen class hours in the revised instructional units.

As evaluated by the instructor, the materials were extensive in scope. The basic and vital concepts that form the main content of the population education course and the actiirties in classroom and community situations were sufficient in quantity and quality to inculcate in students a broad perspective and a deeper understanding of the knowledge and skills inherent in population education.

These feedback reports imply that the curriculum materials used in this field try-out can serve as a prototype in preparing and developing population education curriculum materials in teacher education programmes. With this undertaking, a solid basis has been laid out for the future development of curriculum materials on population education for teacher education programmes.

e. Data Collected and Used for Refining the Materials for Class Instructional Situations

The field try-out at the West Visayas State College yielded essential data for the revision and refinement of the original curriculum materials. Based on student and faculty feedback, more effective and varied methods of motivating students have been incorporated in the Teaching Guides in each of the three units. Activities for each class hour laid out in more detail provide students ample leeway for self-initiated exercises and projects. Additional demographic sources geared towards local community and national situations and more problem-oriented devices have enriched the Learning Aids. Graphs and other learning aids have been either added or deleted as necessary.

A detailed and more specific scheme has been devised for both students' evaluation and instructor's evaluation. Furthermore, a broader basis for evaluating individual student performance has been incorporated in the section which follows teaching and learning aids.

Revision of the curriculum guides and the teaching guides proceeded along the principles and theories underlying the structure of knowledge. Various information and data considered basic in the preparation of curriculum materials for population education were taken into account, such as structuring of knowledge, motivating students, developing learning exercises, developing a table of specifications for tests, developing test items, developing a curriculum rationale, demographic sources, writing learning objectives and developing graphic aids.

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On the basis of the data collected for refining the materials, the three instructional units and a supplementary curriculum guide which were previously prepared at the Asian Institute for Teacher Educators/National Research and Development Centre for Teacher Education were revised.

In view of the pervasive lack of experimental knowledge in the field of population education, it seems desirable to have more of this type of experimental study in the development of national as well as regional population education programmes. This type of experimental study will not only help determine outcomes in students' learning as well as attitudinal changes on population matters, but might precipitate further action as has been observed in the case of West Visayas State College where the Board of Trustees had, as a result of the findings of the field try-out, proposed the inclusion of population education in the curriculum starting with the summer session of 1973.

CURRICULUM DEVELOPMENT IN POPULATION EDUCATION*

by

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One of the most formidable problems that confront the countries in the Asian Region is the rapid growth of their population which retards and often nullifies their efforts for socio-economic development. An important means to tackle this problem of population is the promotion of population education at all levels of educational institutions.

There is no denying the fact that when a country is facing a problem, it becomes obligatory for those concerned with education to assume the responsibility for the solution of the problem. How to cope with the situation, therefore, is the primary concern of the educationists.

Education being a formal agency for transmitting new ideas to the young generation, it becomes imperative to create an awareness and understanding in the children and youth about the population situation and its consequences through organized education. In this context the scope of population education has to be wide and it encompasses all efforts to treat the problems of population, showing how they have a decisive bearing on the achievement of the economic, social and educational objectives of the future plans of the nation. Thus conceived population education becomes an educational instrument dealing with population studies in the educational institutions.

Population studies as used here is a term similar to such terms as social studies, mathematics, science, biology and other subject areas which are being used. The substantive field of population education then, is population studies and the translation of this substantive field into the curriculum will be referred to as population studies education or population education. 1/

Utilizing this framework, there is no simple universal definition of population education except in the general sense that it is the curriculum dealing with population studies. Educators are familiar with terms such as social studies education, mathematics education, health education, vocational education and science education. To these, population education may now be

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* Paper read at the National Workshop on Population Education, Islamabad, Pakistan, 14 February 1974. The views expressed are personal and do not necessarily reflect the views of Unesco.

1/Unesco Regional Office for Education in Asia, Population Studies for Population Education in Asia, A Source Book (Trial Edition), p. 1.8, 1973.

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added. Population Education in this sense is the particular set of goals and objectives, conceptual organization and content, and pedagogical strategies which are worked out in a particular setting dealing with the subject fields of population studies. 2/

Operating in this framework, it is clear that the content of population education will vary in different educational systems. The goals of population education will reflect in some measure the national goals of the country and more specifically the national educational goals. In this sense, the content of population studies should contain data and relationships which are specific to that country, and its goals need to be in tune with the overall national goals of education in the country concerned in order to become an integral part of the total educational programme of the country.

This proposition will help clarify the concept and meaning of population education in an attempt to develop a curriculum. It is clear that through the curriculum, education seeks to achieve the ultimate goal which is to help the students to achieve self-direction and learn to contribute to the betterment of human life. Hence the first need is to develop a well-defined curriculum of population education with a well-conceived sequence of activities and experiences suited to the conditions of the country concerned.

Curriculum development is a complex task in which several processes are involved. The basic questions which have to be answered by educators while developing a curriculum are as follows:

1. What educational purposes should the school seek to attain through the introduction of population education as an integral part of the school programme? (What are the objectives of population education in the schools and the colleges?)

2. What knowledge base for curriculum development has to be built up that is likely to provide the base line data and information from which the content of population education can be drawn?

3. What educational experiences can be provided that are likely to attain these objectives? (What content can be selected from the knowledge base to attain these objectives?)

4. How can these experiences be effectively organized? (What would be the modes of inclusion of population education content into the school curricula?)

5. What should be the strategy involved in instructional materials development and programme implementation?

2/ ibid, p. 1.8.

Formulation of Goals and Objectives

Explicit goals are necessary to guide learning because unguided educational experience may produce a wide variety of efforts some desirable and others not so desirable.

There are two important steps involved in the formulation of goals and objectives of population education.

The first step would be the clarification of the concept of population education in relation to population issues and the development of a point of view suited to the needs of the country and in tune with the prevailing school programme. On the one hand each country is facing population problems in a somewhat different form, on the other hand each educational system has its own specific goals based on national population policy. Moreover, every society is sustained by a core of values that lies at the heart of its way of life. These values of a culture lend tone and spirit to the total educational process and allied activities.

Therefore in order to clarify the concept and meaning of population education and to identify clear-cut objectives for teaching it at the school stage, what is needed is a careful review of the broad canvas of society in the country concerned, its socio-economic needs, the pull of tradition and the forces of change, the influence of science and technology on the life of people, the aspirations of the people and the direction that is being taken for its planned population growth. The goals and objectives formulated must not only be in tune with the national goals and aims of education as already worked out or in the process of development, but should also take account of the maturity level of the learner and the nature of the subject fields in which population education components will be incorporated.

The second is a critical study of the curricula which are operative at present in the country. This means an analysis of draft curriculum syllabi or textbooks used in various subject areas. This analysis will provide a background and the inherent objectives of the school programmes and also ideas of what could be done in formulating the objectives as well as incorporating the population concepts or topics in relevant areas within the existing framework of the curricula in the schools and colleges.

It would be worthwhile to review and consult all the available literature and the attempts which are made by other countries. This review should result in the identification of some major goals and objectives for population education, on which a consensus may emerge after discussions at various levels.

Formulation of Knowledge Base for Curriculum Development

After specification of goals and objectives, one basic requirement for curriculum development in population education is formulation of a systematic body of knowledge from which content will be drawn. A systematic body of knowledge in population education is not readily available at

curriculum writers in population education because of the fact that: 1) population education is a relatively new field for scholars and the basic structure of the field is only now taking place; 2) even with a general conceptual structure emerging, specific data needs to be country specific and many needed studies have not yet been done in many countries in the region and 3) the relevant data which are now available have not yet been pulled together in a form accessible to curriculum writers.

One approach to meet this problem is to assemble and organize the concepts and data which are available and to develop a means for providing these to curriculum writers at the national level. This work needs to be developed by the cooperative efforts of various scholars in different discipline. This means that the development of a systematic body of knowledge on population education requires an interdisciplinary approach from several different disciplines including demographers, social scientists, professional educators and so on. The basic requirement for curriculum development, therefore, will be to build up a systematic body of knowledge on population education from which curriculum content can be selected and drawn.

Selection of Content

The next step in the process of curriculum development is the selection of suitable content or educational experiences that are likely to attain the objectives which are set forth. This means identification of an integrated set of concepts with relevant data dealing with population problems and issues, and the relationship of population problems to the quality of life of the people in the country concerned in particular and the world in general.

Because of the very nature of goals and objectives laid down for population education, this is the stage to draw on an integrated set of core concepts relevant to population education. These concepts can be selected from the knowledge base on the basis of the criteria laid down in the objectives and the selected set of concepts should form the outline of the content to be incorporated in various subject fields in the total school programme. For incorporation, it would be necessary that the content is properly articulated and properly graded according to the suitability of concepts and information for different levels of school education. It must also take account of the characteristics of target audiences to which the instructional programme is directed.

No perfect model of population education may exist at present which could be adopted by any country, and perhaps it is also not very desirable to adopt an existing model. The selection of content, therefore, would be specific for a country and unique to a degree. However, it might be desirable to give attention to the approaches used in other countries, particularly those in the Asian Region with several common traditions and values.

Incorporation of Population Education in School Curriculum

The question how to incorporate population education in the school programme involves an assessment of a number of different factors. The

assessment of these factors includes an examination of proposed curricula for the schools, frameworks of various subject fields, the time allocated to these fields for instruction, teacher availability, and grade levels which will be allocated to population studies, so on.

Examination of the draft curricula of social studies, mathematics, science, health education and home economics in Pakistan, for example, reveals that all of these subject fields involve population studies to greater or lesser extent. For instance, curricula of social studies, health and home economics deal with population education units to a greater extent while the others such as science, mathematics, language, barely touch upon population study elements. Based on the extent of its content treatment, it is necessary to make decisions as to approaches for incorporating population education into various subject fields, to be used.

Population education elements must be developed in these subject fields so as to follow a spiral pattern of development starting from introduction of factual information through different subjects such as science, mathematics, language and English. While following this pattern, social studies, health and home economics may need to adopt unit of study programme as population itself is an essential element of these subject fields. The decision as to modes of incorporation into school curricula needs to be both pragmatic and pedagogical.

Preparation of Instructional Materials

The more important sequential step in the process of curriculum development would be the preparation of instructional materials for the use of teachers and students. It may take the form of curricula, syllabi textbooks, teacher's guides, student's work book, supplementary reading materials or picture books, etc. On the availability of good materials depends the success of the programme. It is not easy to prepare instructional materials because it involves the translation of difficult concepts, and their presentation in a form suited to the maturity level of the students at different stages. It would, therefore, be necessary to form working groups of teams consisting of knowledgeable persons from the various fields and with varying competencies. The working team may need to include classroom teachers, subject specialists from relevant fields, general curriculum writers and some persons from the field of social science. The persons who have experience in the field of social science may assist a great deal to build up knowledge base from which content can be drawn.

In the interest of the programme, it may be good for a country to draw up national level plans for production and development of instructional materials of population education with the cooperation of educational institutions. To the extent possible, try-out of the materials which are prepared may also be undertaken so that the feed-back may be utilized for improving them. The teachers involved in the production of materials may also take up "field testing" of the material before giving them the final form.

In conclusion, there is one last point that must also be mentioned. It would not be out of place to stress the need of teacher training in this field. Considering the place of teachers and their convictions and orientation in this new field, it is absolutely necessary that very careful pre-service and in-service preparation of teachers should be planned so that this new concept is efficiently handled in the classroom by the teachers. Certainly, it is the teachers who will play an important role in the implementation of this new scheme of educational development.